What is Claimed is:

1. Apparatus for detecting an arcing fault at a component of an electric power system, said arcing fault generating light at a first predetermined wavelength in the presence of light at a second wavelength from another source which may include said first predetermined wavelength, said second wavelength being different from said first predetermined wavelength, said apparatus comprising:

a light source providing modulated light at the second wavelength and at a first frequency;

an optical fiber including a first end, a gathering portion and a second end, the first end of said optical fiber receiving the modulated light from said light source, the gathering portion being proximate said component and receiving gathered light including some of said light at a first predetermined wavelength and some of said light at a second wavelength from another source, the second end of said optical fiber including said modulated light and said gathered light;

a splitter receiving said modulated light and said gathered light from the second end of said optical fiber and splitting said modulated light and said gathered light into a first light beam and a second light beam;

a first filter extracting from said first light beam a first filtered light beam including a first wavelength bandwidth having said first predetermined wavelength;

a first detector generating a first sensed light electrical signal from said first filtered light beam;

a second filter extracting from said second light beam a second filtered light beam including a second wavelength bandwidth not having said first predetermined wavelength;

a second detector generating a second sensed light electrical signal from said second filtered light beam;

a third filter extracting from said second sensed light electrical signal a third electrical signal representative of said some of said light at a second wavelength from another source and not including said modulated light; and

means for generating an arcing signal in response to a predetermined relationship between said first sensed light electrical signal and said third electrical signal.

2. The apparatus of Claim 1 wherein said means for generating an arcing signal includes a fourth filter and a threshold detector, said fourth filter extracting from said second sensed light electrical signal a fourth electrical signal representative of said modulated light, said threshold detector generating an error signal in response to the fourth electrical signal being below a predetermined threshold value.

3. The apparatus of Claim 1 wherein said means for generating an arcing signal includes a comparator comparing said first sensed light electrical signal to said third electrical signal and generating said arcing signal when said first sensed light electrical signal exceeds said third electrical signal by at least a predetermined amount.

4. The apparatus of Claim 1 wherein said component of an electric power system is a switchgear bus bar; and wherein said optical fiber is a plastic optical fiber including an outer jacket, an inner fiber, a first connector at the first end, an opening in the outer jacket at the gathering portion and a second connector at the second end, the first connector engaging said light source and receiving the modulated light therefrom, the opening in the outer jacket at the gathering portion being proximate said switchgear bus bar, the second connector engaging the splitter and transmitting said modulated light and said gathered light thereto.

5. The apparatus of Claim 1 wherein said second wavelength is about 820 nm; and wherein said first frequency is about 2 MHz.

6. The apparatus of Claim 1 wherein said splitter is an optical splitter which splits said modulated light and said gathered light into the first light beam having a first intensity and the second light beam having a second intensity, with said first intensity being about equal to said second intensity.

7. The apparatus of Claim 1 wherein said first wavelength is about 520 nm; and wherein said first filter is an optical filter including a first bandwidth of wavelengths, said first bandwidth including 520 nm.

8. The apparatus of Claim 1 wherein said second wavelength is about 820 nm; and wherein said second filter is an optical filter including a second bandwidth of wavelengths, said second bandwidth including 820 nm.

9. The apparatus of Claim 1 wherein said component of an electric power system includes an enclosure housing a switchgear bus bar, said enclosure including a surface facing said switchgear bus bar; wherein said optical fiber includes an outer jacket, an inner fiber and an opening in the outer jacket at the gathering portion; wherein said optical fiber at the gathering portion is formed as a spiral and is fastened to the surface of said enclosure; and wherein the opening in the outer jacket at the gathering portion is opposite said surface and proximate said switchgear bus bar to receive said some of said light at a first predetermined wavelength and said some of said light from another source.

10. A method of detecting an arcing fault at a component of an electric power system, said arcing fault generating light at a first predetermined wavelength in the presence of light at a second wavelength from another source which may include said first predetermined wavelength, said second wavelength being different from said first predetermined wavelength, said method comprising:

providing modulated light at the second wavelength and at a first frequency;

employing an optical fiber including a first end, a gathering portion and a second end;

receiving the modulated light at the first end of said optical fiber;

disposing the gathering portion of said optical fiber proximate said component to receive gathered light including some of said light at a first predetermined wavelength and some of said light at a second wavelength from another source;

receiving said modulated light and said gathered light from the second end of said optical fiber and splitting said modulated light and said gathered light into a first light beam and a second light beam;

extracting from said first light beam a first filtered light beam including a first wavelength bandwidth having said first predetermined wavelength;

generating a first sensed light electrical signal from said first filtered light beam;

extracting from said second light beam a second filtered light beam including a second wavelength bandwidth not having said first predetermined wavelength;

generating a second sensed light electrical signal from said second filtered light beam;

extracting from said second sensed light electrical signal a third electrical signal representative of said some of said light at the second wavelength from another source and not including said modulated light; and

generating an arcing signal in response to a predetermined relationship between said first sensed light electrical signal and said third electrical signal.

11. The method of Claim 10 further comprising

comparing said first sensed light electrical signal to said third electrical signal; and

generating said arcing signal when said first sensed light electrical signal exceeds said third electrical signal by at least a predetermined amount.

12. The method of Claim 10 further comprising

extracting from said second sensed light electrical signal a fourth electrical signal representative of said modulated light; and

generating an error signal in response to the fourth electrical signal being below a predetermined threshold value.

13. The method of Claim 12 further comprising

employing a low pass filter having a first turn-over frequency, which is less than said first frequency, to extract from said second sensed light electrical signal said third electrical signal representative of said some of said light at the second wavelength from another source and not including said modulated light at said first frequency; and

employing a high pass filter having a second turn-over frequency, which is greater than said first turn-over frequency and which is less than

said first frequency, to extract from said second sensed light electrical signal said fourth electrical signal representative of said modulated light at said first frequency.

14. The method of Claim 10 further comprising

employing about 520 nm as said first predetermined wavelength;

employing about 820 nm as said second wavelength.

15. Apparatus for protecting a bus of an electric power system from an arcing fault, which generates light at a first predetermined wavelength in the presence of light at a second wavelength from another source which may include said first predetermined wavelength, said second wavelength being different from said first predetermined wavelength, said apparatus comprising:

a light source providing modulated light at the second wavelength and at a first frequency;

an optical fiber including a first end, a gathering portion and a second end, the first end of said optical fiber receiving the modulated light from said light source, the gathering portion being proximate said component and receiving gathered light including some of said light at a first predetermined wavelength and some of said light at a second wavelength from another source, the second end of said optical fiber including said modulated light and said gathered light;

a splitter receiving said modulated light and said gathered light from the second end of said optical fiber and splitting said modulated light and said gathered light into a first light beam and a second light beam;

a first filter extracting from said first light beam a first filtered light beam including a first wavelength bandwidth having said first predetermined wavelength;

a first detector generating a first sensed light electrical signal from said first filtered light beam;

a second filter extracting from said second light beam a second filtered light beam including a second wavelength bandwidth not having said first predetermined wavelength;

a second detector generating a second sensed light electrical signal from said second filtered light beam;

a third filter extracting from said second sensed light electrical signal a third electrical signal representative of said some of said light at a second wavelength from another source and not including said modulated light;

means for generating an arcing signal in response to a predetermined relationship between said first sensed light electrical signal and said third electrical signal; and

means for removing power from said bus in response to said arcing signal.

16. The apparatus of Claim 15 wherein said means for removing power from said bus in response to said arcing signal includes a shorting switch, which faults said bus in response to said arcing signal, and an upstream circuit breaker, which removes power from said bus in response to detection of overcurrent in said faulted bus.

17. The apparatus of Claim 16 wherein said means for generating an arcing signal includes a fourth filter and a threshold detector, said fourth filter extracting from said second sensed light electrical signal a fourth electrical signal representative of said modulated light, said threshold detector generating an error signal in response to the fourth electrical signal being below a predetermined threshold value.

18. The apparatus of Claim 16 wherein said shorting switch includes a shorting member; and wherein said means for removing power includes a control circuit, which inputs said arcing signal and said error signal, said control circuit actuating said shorting member when said arcing signal is true and when said error signal is false.

19. The apparatus of Claim 15 wherein said optical fiber includes an outer jacket, an inner fiber, a first connector at the first end, an opening in the outer jacket at the gathering portion and a second connector at the second end, the first connector engaging said light source and receiving the modulated light therefrom, the opening in the outer jacket at the gathering portion being proximate said bus, the second connector engaging the splitter and transmitting said modulated light and said gathered light thereto.

20. The apparatus of Claim 15 wherein said bus is housed within an enclosure including a surface facing said bus; wherein said optical fiber includes an outer jacket, an inner fiber and an opening in the outer jacket at the gathering portion; wherein said optical fiber at the gathering portion is formed as a spiral and is fastened to the surface of said enclosure; and wherein the opening in the outer jacket at the gathering portion is opposite said surface and proximate said bus to receive said some of said light at a first predetermined wavelength and said some of said light from another source.